MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF AERONAUTICS - STANDARD SPECIFICATION
L-125
Installation of Airport Lighting Systems
Including Applicable Subparts

DESCRIPTION

1.1. This item shall consist of airport runway and taxiway lighting systems, taxiway guidance signs and visual approach aids, furnished and installed in accordance with this specification, the applicable subparts and referenced specifications. The systems shall be installed at the location and in accordance with the dimensions, design, and details shown in the plans. This item shall include furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the Engineer.

The items of work of the airport lighting system that fall within the scope of other lighting specifications shall be constructed and paid for as items of those specifications, as follows:

Specification
- L-101 - Airport Rotating Beacon
- L-102 - Airport Hazard Beacon
- L-103 - Airport Beacon Towers
- L-107 - Airport Wind Cones
- L-108 - Airport Underground Cable
- L-109 - Airport Transformer Vault and Vault Equipment
- L-110 - Airport Underground Electrical Duct
- L-112 - Airport Wind Tee
- L-119 - Airport Obstruction Lights

1.2 **Subparts to This Specification**. Details pertaining to a specific system covered in this item are contained in the subparts listed in paragraphs 125-1.3 through 125-1.7.

The pertinent parts of the Equipment, Materials, Installation, Testing and Inspection Sections of the Advisory Circulars listed in paragraphs 125-1.3 through 125-1.7, as may be required for the contractor to satisfactorily complete the work, are included in the subparts and one or more of them, as specified, shall govern the work. Those portions of the Advisory Circulars that pertain to design or maintenance or to work included under another specification have been omitted.

The identification numbers of the Advisory Circulars designated herein do not show revision or change suffixes. The edition or change in effect as of the date of the applicable subpart is included and specified. Subsequent applicable revisions or changes will be noted in the plans.

The Advisory Circulars of the 150/5340 and 150/5345 series that are mentioned in the subparts are material and manufacturing specifications and are correlated to the L-800 series of FAA lighting equipment specifications. A cross listing of these advisory circulars with the corresponding equipment specifications is reproduced in the Bibliography (paragraph 125-2.2).

Approved: MAC 4-1-76 FAA 5-6-76

1.3 Subpart "A". Runway and Taxiway Edge Lighting Systems (AC 150/5340-24).

1.4 Subpart "B". Economy Approach Lighting Aids (AC 150/5340-14).

1.5 Subpart "C". Taxiway Guidance Sign System (AC 150/5340-18).

1.6 Subpart "D". Installation Details for Runway Centerline and Touchdown Zone Lighting Systems (AC 150/5340-4).

1.7 Subpart "E". Taxiway Centerline Lighting System (AC 150/5340-19).

EQUIPMENT AND MATERIALS

2.1 General.

(a) Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Washington, D.C. 20591, and shall be listed in Advisory Circular 150/5345-1, Approved Airport Lighting Equipment.

(b) All other equipment and materials covered by other referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specifications.

(c) Descriptions of the equipment and materials required for a particular system are contained in the applicable subpart or in the plans.

2.2 Bibliography of Current Airport Lighting Materials Specifications. All equipment requiring FAA approval shall meet the following specifications, as applicable. Advisory Circular and specification revision or change suffixes are not shown. The edition or change current at the date of plans shall govern unless otherwise noted. Use of later editions or changes is permissible.

Advisory Circular 150/5345	FAA Spec. Number	Short Title
-1	--	Approved Airport Lighting Equipment List
-2	L-810	Obstruction Light
-3	L-821	Lighting Panel for Remote Control
-4	L-829	Taxiway Guidance Signs
-5	L-847	Circuit Selector Switch, 5KV, 20a
-7	L-824	Underground Electrical Cables
-10	L-828	Constant Current Regulators
-11	L-812	Constant Current Regulators, Remote Operation
-12	L-801	Rotating Beacon for Small Airports
-13	L-841	Auxiliary Relay Cabinet Assembly
-18	L-811	Constant Current Regulator, Direct Operation
-21	L-813	Constant Current Regulator for Taxiway Lights
-26	L-823	Plug and Receptacle Cable Connectors
-27	L-807	Eight Foot and Twelve Foot Wind Cones
-28	L-851	Visual Approach Slope Indicators

-30	L-846	Electrical Wire, Circuits in Pavement
-36	L-808	Lighted Wind Tee
-39	L-853	Runway and Taxiway Retroreflective Markers
-42	L-857	Airport Light Bases, Transformer Housing
-43	L-856	High Intensity Obstruction Light
-44	L-858	Retroreflective Taxiway Guidance Signs
-45	--	Lightweight Approach Light Structure
-46	L-850	Semiflush Runway Lights
-46	L-852	Semiflush Taxiway Lights
-47	L-830	Isolation Transformers
-48	L-860	Low Intensity Edge Lights
-48	L-861	Medium Intensity Edge Lights
-48	L-862	High Intensity Edge Lights

Advisory Circular 150/5340	FAA Spec. Number	Short Title
-14	L-848	Medium Intensity Approach Light Equipment
-14	L-849	Condenser Discharge Flashing Light
-14	L-854	Radio Controls
-14	L-859	Omnidirectional Lead-in Approach Lights

Other Pertinent Material Specifications

Number	Short Title
AC 150/5340-8	Airport 51' Tubular Beacon Tower
CAA 291	Airport 36 Inch Beacon
CAA 446	300 mm Hazard Beacon
MIL-I-7854	12' Wind Cone
MIL-T-8637	Airport Beacon Towers (Structural)

CONSTRUCTION METHODS

3.1 General. The installation and testing details for the systems shall be as specified in the applicable subparts and in the plans.

3.2 Placing Lights. The light fixture shall be installed at the approximate location indicated in the plans. The exact location shall be as directed by the project engineer.

3.3 Inspection and Testing.

(a) **General**. All final inspections and tests, for equipment installed under this contract, shall be conducted in the presence of the project engineer and the authorized representative of the Bureau of Aeronautics and (when required) the Federal Aviation Administration, prior to final acceptance. The contractor shall have the following test equipment, and personnel to operate same, available at the final inspection:

1. Voltmeter with proper scales
2. Clamp-on ammeter with proper scales
3. 5000V megger
4. Ground resistance testing equipment

The contractor shall also provide necessary tools, material, and personnel to perform the following for the final inspection:

1. Open and close any and all equipment

enclosures, regulators, junction boxes, terminal panels, square duct, etc.

2. Open and close isolation transformer housings.

3. Open and reconnect splices (other than cast type).

4. Uncover and rebury DEB isolation transformers.

5. Expose a section of cable of sufficient length in each homerun to verify the cable meets the specifications listed in the plans and proposal.

6. Demonstrate aiming angles of VASI, REIL and beacon.

7. Demonstrate operation of any and all lighting, power and control systems.

8. Demonstrate in each constant current regulator:

   a. Operation under local and/or remote control.
   b. Current measurements for each brightness step.
   c. Inspect voltage, inspect transformer connections and output voltage measurements.

(b) **System Inspection**. The contractor shall perform the following inspections and checks:

1. Inspect each light unit to determine that it is installed correctly, at the proper height and location, and properly aligned, leveled and oriented.

2. Check all equipment covered by FAA specifications to determine that the manufacturers have supplied approved equipment. The equipment shall also be checked for general conformance with specification requirements.

3. Check input voltage of power and control circuits to determine that the voltage is within limits required for proper equipment operation. Specific voltage tolerances shall be as specified in the applicable subpart or in the plans. Proper voltage taps shall be selected on equipment where taps are provided.

4. Check wiring and electrical components (fuses, circuit breakers, transformers, etc.) to determine that ratings are correct and the components are properly installed.

5. Check all nuts, bolts and other hardware to determine that all components are secure.

6. Further inspections pertaining to a particular lighting system shall be accomplished as listed in the applicable subpart.

7. The contractor shall correct, to the satisfaction of the project engineer, any installation or equipment deficiencies revealed by these inspections at no additional cost to the project.

(c) **System Tests**. The contractor shall perform the following tests:

1. The installation shall be tested by operating the systems continuously for at least one-half hour or such other period as directed by the project engineer.

2. Each lighting control shall be operated not less than ten times or as directed by the project engineer.

3. Completed primary circuits shall be meggered to insure an insulation resistance to ground of at least 50 megohms. Caution: In a parallel (multiple) system all lamps must be removed or primary circuit disconnected prior to meggering.

4. All grounding systems shall be checked to insure the resistance to ground of these systems does not exceed 10 ohms for electric vault grounding and 25 ohms for other grounding systems.

5. Further tests pertaining to a particular lighting system shall be conducted according to provisions in the applicable subpart.

6. The contractor shall repair or replace any equipment not performing to the satisfaction of the project engineer. Repair or replacement shall be at the discretion of the project engineer and shall be at no additional cost to the project.

3.4 Equipment Operation and Maintenance Manuals. The contractor shall provide to the airport owner through the project engineer, prior to final inspection, one copy of all lighting equipment operation and maintenance manuals, pamphlets, brochures, etc., in good condition, as supplied by the equipment manufacturer.

METHOD OF MEASUREMENT

4.1 The quantity of runway and taxiway lights, taxiway guidance signs and visual approach aids of the specifications and descriptions specified in the bid schedule, shall be the number of each type unit installed in place, ready for operation and accepted.

BASIS OF PAYMENT

5.1 Payment shall be made at the respective contract unit prices for each type of runway and taxiway lights, taxiway guidance signs and visual approach aids. These prices shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under the respective item numbers and item nomenclature specified under the applicable subparts on a per unit (unless otherwise specified) basis.

Separate items will be established for each type light unit, approach aid, or lump sum work specified in the plans. The items shall be further identified by lens color, lamp wattage, mounting type, specification number, etc., as required, to provide separate descriptions and quantities for the various items.

The first three digits of any item number for work included under this specification shall be 125.